

## ABSTRACT

In an open access environment, developing fair and equitable reactive power allocation method has been a great deal of research with many transaction taken places in a time. Reactive power cannot be reasonably transported over long distances and is confined to mainly local consumption. Thus, the market will be induced to determine the actual value of each supply. A fair and acceptable method for allocating the reactive power may facilitate the market participants make appropriate and efficient investments of reactive power supports, which include static capacitors and dynamic reactive power devices. All of these can offer more tools to the system operators to properly manage the system security. However, due to non linear nature of power flow, it is difficult to evaluate reactive power allocation accurately. Therefore it required to use circuit theory, equivalent reactive compensation method, sensitivity indices, and tracing methods for reactive power allocation. In a related work based on artificial intelligent techniques, [1] proposed a transmission loss allocation method using Artificial Neural Network (ANN). The ANN allocates losses with good accuracy and in a quick manner. Reference [2] proposed a fuzzy logic as a tool in Available Transfer Capability (ATC) determination to cater the accuracy or the online CPU time requirements in a large-scale power system. Reference [3] proposed computation of ATC for real time applications using three different intelligent technique viz., i) Back Propagation Algorithm (BPA) ii) Radial Basis Function (RBF) Neural Network and iii) Adaptive Neuro Fuzzy Inference System (ANFIS) and compared with the Full AC Load Flow method. From those three different intelligent techniques, ANFIS has minimum error for the base case and line outage case of ATC computations; it can be used in real time application. However, all these methods do not cater for the reactive power transfer allocation. It can be expected that the application of ANN to the developed methodology will further contribute in improving the computation time of reactive power allocation methodology for deregulated system.